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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/629,489	07/28/2003	Christopher J. Bulian	S-100,500	7447

35068 7590 04/06/2006

UNIVERSITY OF CALIFORNIA  
LOS ALAMOS NATIONAL LABORATORY  
P.O. BOX 1663, MS A187  
LOS ALAMOS, NM 87545

EXAMINER

WARTALOWICZ, PAUL A

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 04/06/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/629,489	BULIAN ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Paul A. Wartalowicz	1754	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 July 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 28 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date <u>7/28/03</u>   | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102/103***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claim 9 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Sherman (U.S. 2002/0005145).

Sherman teaches a photocatalyst particles comprising tungsten trioxide (tungsten trioxide is equivalent to tungsten trioxide hydrate, paragraph 0208, lines 1-3) wherein the particles have platelet morphology (paragraph 0209, lines 10-12).

If Sherman does not teach wherein it is inherent that tungsten trioxide hydrate has platelet morphology, then it would be obvious to one of ordinary skill in the art at the time applicant's invention was made to provide for that tungsten trioxide hydrate having platelet morphology by the reasoned explanation that tungsten trioxide and tungsten trioxide hydrate are similar materials.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-6 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Redanz (U.S. 2993755) in view of Baresel et al. (U.S. 3902917).

Redanz teach a process for making tungstic acid (col. 2, lines 54-56) wherein ammonium paratungstate is mixed with chemically pure hydrochloric acid (col. 2, lines 46-52) and then decanted with water in order to form a precipitate of tungstic acid

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(tungstic acid is hydrated tungsten trioxide, col. 2, lines 53-56). Redanz fails to teach wherein the hydrochloric acid comprises an aqueous solution of about 35-38 weight percent of hydrochloric acid and wherein a method for preparing anhydrous  $\text{WO}_3$  nanopowder comprising heating a precipitate of  $\text{WO}_3 \cdot \text{H}_2\text{O}$  (hydrated tungsten trioxide) at a temperature of  $200^\circ\text{C}$  to  $400^\circ\text{C}$ .

Baresel et al. teach a process for making finely divided  $\text{WO}_3$  (finely divided inherently teaches nanopowder, col. 4, lines 45-48) wherein ammonium tungstate is mixed with concentrated hydrochloric acid (37% HCl by weight, col. 4, lines 30-33) for the purpose of forming tungstic acid hydrate (col. 4, lines 40-43).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide wherein ammonium tungstate is mixed with concentrated hydrochloric acid (37% HCl by weight, col. 4, lines 30-33) in Redanz in order to form tungstic acid hydrate (col. 4, lines 40-43) as taught by Baresel et al.

As to the limitation wherein a method for preparing anhydrous  $\text{WO}_3$  nanopowder comprising heating a precipitate of  $\text{WO}_3 \cdot \text{H}_2\text{O}$  (hydrated tungsten trioxide) at a temperature of  $200^\circ\text{C}$  to  $400^\circ\text{C}$ , Baresel et al. teach wherein precipitated tungstic acid is heated at a temperature of  $200^\circ\text{C}$  (col. 4, lines 40-44) for the purpose of expelling the water formed by the dehydration of tungstic acid to produce tungsten trioxide (col. 4, lines 42-46).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide wherein precipitated tungstic acid is heated at a temperature of  $200^\circ\text{C}$  (col. 4, lines 40-44) in Redanz in order to expel the

water formed by the dehydration of tungstic acid to produce tungsten trioxide (col. 4, lines 42-46).

As to the limitation wherein tungsten trioxide hydrate nanosized particles have a platelet morphology, the combined teachings of Redanz and Baresel et al. teach the limitations of making tungsten trioxide hydrate as claimed such that the tungsten trioxide hydrate nanosized particles having a platelet morphology is inherently taught by the combined teachings of Redanz and Baresel et al.

Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over Redanz (U.S. 2993755) in view of Baresel et al. (U.S. 3902917) and Sato et al. (U.S. 3452106).

Redanz teach a process for making tungstic acid (col. 2, lines 54-56) wherein ammonium paratungstate is mixed with chemically pure hydrochloric acid (col. 2, lines 46-52) and then decanted with water in order to form a precipitate of tungstic acid (tungstic acid is hydrated tungsten trioxide, col. 2, lines 53-56). Redanz fails to teach wherein the hydrochloric acid comprises an aqueous solution of about 35-38 weight percent of hydrochloric acid and wherein a method for preparing anhydrous  $WO_3$  nanopowder comprising heating a precipitate of  $WO_3 \cdot H_2O$  (hydrated tungsten trioxide) at a temperature of 200°C to 400°C and wherein the  $WO_3$  nanopowder is reacted with hydrogen gas to form  $WO_2$ .

Baresel et al. teach a process for making finely divided  $WO_3$  (finely divided inherently teaches nanopowder, col. 4, lines 45-48) wherein ammonium tungstate is

mixed with concentrated hydrochloric acid (37% HCl by weight, col. 4, lines 30-33) for the purpose of forming tungstic acid hydrate (col. 4, lines 40-43).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide wherein ammonium tungstate is mixed with concentrated hydrochloric acid (37% HCl by weight, col. 4, lines 30-33) in Redanz in order to form tungstic acid hydrate (col. 4, lines 40-43) as taught by Baresel et al.

As to the limitation wherein a method for preparing anhydrous  $WO_3$  nanopowder comprising heating a precipitate of  $WO_3 \cdot H_2O$  (hydrated tungsten trioxide) at a temperature of 200°C to 400°C, Baresel et al. teach wherein precipitated tungstic acid is heated at a temperature of 200°C (col. 4, lines 40-44) for the purpose of expelling the water formed by the dehydration of tungstic acid to produce tungsten trioxide (col. 4, lines 42-46).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide wherein precipitated tungstic acid is heated at a temperature of 200°C (col. 4, lines 40-44) in Redanz in order to expel the water formed by the dehydration of tungstic acid to produce tungsten trioxide (col. 4, lines 42-46).

As to the limitation wherein tungsten trioxide hydrate nanosized particles have a platelet morphology, the combined teachings of Redanz and Baresel et al. teach the limitations of making tungsten trioxide hydrate as claimed such that the tungsten trioxide hydrate nanosized particles having a platelet morphology is inherently taught by the combined teachings of Redanz and Baresel et al.

As to the limitation wherein the  $\text{WO}_3$  nanopowder is reacted with hydrogen gas to form an oxide of lower valency than  $\text{WO}_3$ , Sato et al. teach a process for making tungsten dioxide (oxide of lower valency than  $\text{WO}_3$  is  $\text{WO}_2$ , col. 5, lines 38-40) wherein tungsten trioxide is exposed to hydrogen gas (col. 5, lines 40-42) for the purpose of making an oxide of a lower valency (oxide of a lower valency inherently teaches  $\text{WO}_2$ , col. 5, lines 38-43).

Therefore, it would have been obvious to one of ordinary skill in the art at the time applicant's invention was made to provide tungsten trioxide is exposed to hydrogen gas (col. 5, lines 40-42) in Redanz in order to make an oxide of a lower valency (oxide of a lower valency inherently teaches  $\text{WO}_2$ , col. 5, lines 38-43).

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paul A. Wartalowicz whose telephone number is (571) 272-5957. The examiner can normally be reached on 8:30-6 M-Th and 8:30-5 on Alternate Fridays.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.



Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Paul Wartalowicz  
March 31, 2006



STANLEY S. SILVERMAN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 1700